

P1249 Real-time qPCR analysis of genes expression in carbapenem-resistant bacteria (*Escherichia coli* IMP-type and *Klebsiella pneumoniae* NDM-1) during biofilm formationMajid Al-Bayati*¹, Shivanthi Samarasinghe¹¹ De Montfort University, Leicester, United Kingdom

Background: The present study investigated the expression of genes involved in carbapenems resistance in two microorganisms namely, *E. coli* IMP-type and *K. pneumoniae* NDM-1, via biofilm formation using two different media (LB and AB broth). This was achieved using quantitative real-time PCR (qPCR) to measure gene expression levels at different time intervals including 6, 12, 24, and 48 hours

Materials/methods: The genes quantified include three genes involved in the following processes in *E. coli* IMP-type, namely: biofilm formation (*csgA*, *bssS*, *flu*); quorum sensing (*tnaA*, *mqaR*, *qseB*); the production of autoinducer-2 (*IsrK*, *tqsA*, *IsrG*); and genes stress survival (*evgA*, *oxyR*, *dps*). While the genes studied in *K. pneumoniae* NDM-1 included five biofilm forming genes (*ble*-NDM-1, *ble*-NDM-5, *rpoS*, *csgF*, *orf 48c*, *HPHS*), two quorum sensing genes (*KPHS*-QS1, *KPHS*-QS2), two AI-2 genes (*KphS* 1, *KphS*2) and one carbapenem resistance gene (*bla*-Kpc-2). In addition, three housekeeping genes (16s r RNA) as controls

Results: A significant difference ($p < 0.05$) was observed in RNA expression levels between *E. coli* IMP-type groups, cultured in AB media at time 48 hours. However, no significant difference was observed in groups cultured at 24 hours. In addition, similar results were obtained for *K. pneumoniae* NDM-1.

Conclusions: Although this study was prepared towards the examination of the expression of 15 genes *E. coli* IMP-type and 12 genes *k. pneumoniae* NDM-1. These determinants may demonstrate why several of the genes are the expression in both early and mature stages of biofilm growth. To understand with qPCR that the expression of adherence and biofilm-related genes can be used as a model in the set to study the up and down-regulation of such genes. Late expression of particular genes after 24 and 48 h. at safely higher levels are considered significant for biofilm development and also for the survival of composing cells in rich and minimum broth medium such as LB and AB broth medium.

